Division 1:
Prehospital
Environment

Section 6. General Patient Assessment and Initial Management

TOPIC	CONTENT OUTLINE

Introduction

The student must have successfully completed the following sections prior to participating in this section:

Section 1. Roles and Responsibilities

Section 2. EMS Systems

Section 3. Medical/Legal Considerations

Section 4. Medical Terminology

Section 5. EMS Communications

Although it would be ideal to evaluate the patient completely then go back and manage those conditions found. This is impossible in the acutely ill or injured patient. Many things must be managed when found (e.g., airway compromise). This section on patient assessment and management tries to combine those areas in which simultaneous management and assessment are required. The EMT-I, upon completion of this section, should have enough knowledge to identify when such simultaneous evaluation and management are required and when they are not.

The EMT-I should not attempt to memorize the skill and the condition for which it is used. The prehospital care phase of emergency patient care contains so many variables (e.g., location of the accident, weather, attitude of bystanders, possible contamination or fire), that to match one for one would be an impossibility. For this reason, the EMT must acquire a wide spectrum of knowledge and skills so that they can be applied when and how the situation dictates.

The principles, however, are that life-threatening conditions are treated first, access to definitive care is as rapid as possible, and evaluations which will not alter prehospital management do not extend prehospital on-the-scene time.

The middle principle of access to definitive care as soon as possible will differ in the trauma patient versus the medical patient. In the latter, especially at the EMT-I level, definitive care can be started at the scene (defibrillation for ventricular fibrillation, or glucose for insulin shock).

In the trauma patient, the blood loss must be stopped, the injury repaired, and oxygen carrying whole blood replaced. These cannot be carried out at the scene or in some instances even in the emergency department. Delay for inappropriate evaluations or unnecessary IV's should not be allowed in the field or in the emergency department. There is a finite period for each patient between the time the injury occurs and the time when the hemorrhage must be controlled or the injury repaired.

Overview

I. Introduction
II. Scene Survey
III. Primary Survey
IV. Resuscitation
V. Secondary Survey
VI. History
VII. Definitive Field Management
VIII. Re-evaluation

Objectives

Upon the completion of this section, the student will be able to:

1.6.1 Establish priorities of care based on threat to life conditions

1.6.2 Describe the four phases of patient assessment.

6.3 Discuss the possible environmental hazards that the EMT-I may encounter and the means of protecting him in this environment.

1.6.4 Describe the environmental hazards which a patient might encounter.

1.6.5 Describe the problems an EMT-I might encounter in a hostile situation and describe mechanisms of management.

1.6.6 Describe the various types of protective equipment available to the EMT-I for self-protection and patient protection.

Discuss the appropriate methods of patient protection in each situation.

6.8 Discuss backup personnel, transportation, and equipment.

Define and describe the various classifications of emergencies which an EMT-I will encounter. Base this on medical needs.

1.6.10 Describe the primary survey and what areas are critical to evaluate.

1.6.11 Describe the anatomy of the following: upper airway, tongue, hypopharynx, nasopharynx, oropharynx, larynx, vocal cords.

1.6.12 Describe the function of the vocal cords.

1.6.13 Describe the flow of air from outside the body into the trachea.

1.6.14 Describe the reasons for and mechanism of humidification and warming of the air as it passes through the naso-and oral pharynx.

1.6.15 Describe the pathological conditions that can occur in the nose, pharynx, and larynx to obstruct or retard air flow and identify the complications of laryngeal fracture.

1.6.16 Describe the methods of airway management.

1.6.17 Describe the methods and management of an obstructed airway.

1.6.18 Describe the mechanical methods of airway management including the benefits and limitations. Oral, nasal and EOA.

1.6.19 Describe how the cervical spine is protected throughout these maneuvers.

Describe the anatomy of the following:

a. Lungs
b. Trachea
c. Alveolus
d. Diaphragm
e. Thoracic wall
f. Pleural space.

6.21 Describe how pulmonary ventilation (inhalation and exhalation) is accomplished.

Describe the gaseous exchange across the alveoli-capillary membrane (O_2 and CO_2)

1.6.23 Describe the pulmonary problems that can complicate exhalation and inhalation, the mechanisms by which they reduce ventilation and management of each problem, including:

a. Open pneumothorax
b. Diaphragmatic injury
c. Closed pneumothorax (simple and tension)
d. Flail chest.

1.6.24 Describe the problems of ventilation.

1.6.25 Define mouth-to-mask ventilation, its benefits and limitations.

1.6.26 Discuss the bag-valve-mask (BVM), its benefits and limitations.

1.6.27 Discuss the techniques for evaluating the effectiveness of ventilation.

1.6.28 Describe the anatomy of the heart and the cardiovascular system.

1.6.29 Describe the problems that occur with decreased perfusion.

1.6.30 Describe the pathophysiology of cardiac arrest.

1.6.31 Describe the mechanisms of evaluating the effectiveness of perfusion, including pulse, skin color, capillary refill.

1.6.32 Discuss ventilation with an EOA.

*1.6.33 Discuss ventilation with an endotracheal tube (optional).

*1.6.34 Describe the equipment and method of suctioning the airway, pharynx, and endotracheal tube (optional).

1.6.35 Describe the anatomy of the skin, bones, vessels, and subcutaneous tissue as it relates to hemorrhage control.

1.6.36 Discuss the benefits and complications of hemorrhage control by the following means:

a. Direct pressure

b. Tourniquets

c. Hemostats.

.6.37 Define a mini-neurological examination (level of consciousness).

.6.38 Describe exposing the patient's body for total evaluation.

.6.39 Discuss when this should and should not be carried out.

.6.40 Define shock.

.6.41 Describe the reasons for and mechanisms of patient reassessment in the resuscitation phase.

1.6.42 Define the components of secondary survey and its benefits for patient evaluation.

1.6.43 Describe the assessment of the head, neck, thorax, abdomen, extremities, and nervous system.

1.6.44 Describe the trauma score, define its usefulness and how it is accomplished.

1.6.45 Discuss the important components that must be identified in taking an appropriate history from a patient.

6.46 Describe which laboratory samples are drawn in the field when the IV is started and their usefulness.

.6.47 Define the definitive care phase.

.6.48 Describe how a patient is packaged and stabilized for transportation to the hospital, including airway ventilation, IV fluids, pneumatic anti-shock garment, fracture stabilization, bandaging.

1.6.49 Describe how the patient is immobilized to the backboard.

1.6.50 Describe how the patient is immobilized to the stretcher, and to the ambulance.

1.6.51 Describe patient extrication.

1.6.52 Describe how the patient is monitored en route to the hospital.

1.6.53 Describe how the hospitals are selected for receipt of patients based on patient need and hospital capability.

.6.54 Describe the benefits and complications of lights and sirens and when they should be used.

.6.55 Describe the interaction between the EMT-I and Medical Command authority in regard to: receiving hospital, family physician on the scene, bystander physician on the scene, orders for patient care, needs of the family, and needs of the patient.

.6.56 Describe the usefulness of a run report.

.6.57 Describe the mechanisms of continued evaluation of the patient en route to the hospital.

S1.6.58 Perform a rapid assessment of the patient to identify priorities for care.

S1.6.59 Demonstrate the assessment of the head, neck, thorax, abdomen, extremities, and neurological system.

S1.6.60 Demonstrate effective mouth-to-mask ventilation.

S1.6.61 Demonstrate effective bag-valve

a. Mask

b. EOA

*c. ET (optional)

S1.6.62 Demonstrate effective cardiopulmonary resuscitation.

S1.6.63 Demonstrate the manual methods of airway management.

S1.6.64 Demonstrate the methods of management of an obstructed airway.

S1.6.65 Demonstrate the mechanical methods of airway management

a. Nasal

b. Oral

c. EOA

*d. ET (optional)

S1.6.66 Demonstrate the use of self-protection equipment such as air pack (breathing apparatus), etc.

S1.6.67 Demonstrate the use of various types of portable and fixed suction devices.

* Indicates optional
(S) Indicates Skill Objective

TOPIC	CONTENT OUTLINE

Introduction

A. Priorities
   1. Establish priorities of evaluation and care based on threat-to-life
   2. Rapid assessment (primary survey identifies conditions which potentially involve threat-to-life)
   3. Simultaneous management on these conditions

B. Initial Assessment
   1. Step-wise evaluation of patient to determine priorities of care.
   2. Steps are:
      a. Scene survey
      b. EMT-I and patient protection
      c. Primary survey
      d. Resuscitation
         i. Initiate airway management
         ii. Control hemorrhage
         iii. Initiation of shock management
         iv. Reassessment of threat-to-life conditions identified in primary survey
         v. Continued management of these conditions
      e. Secondary survey
      f. Definitive field management
         i. Stabilization of fractures
         ii. Packaging for transport
      g. Re-evaluation

Scene Survey

A. Hazards.
   1. EMT-I safety precautions
      a. Environment
         i. Location of emergency
            (a) Fire (or risk of fire)
            (b) Wilderness
            (c) Heights
         ii. Physical scene
            (a) Environmental
            (b) Movement (fire, auto, building)
         iii. Weather
      b. Hostile situation
         i. Perpetrator(s) location known or captured
         ii. Bystanders' mood
            (a) Hostile
            (b) Supportive
         iii. Law enforcement assistance available
      c. Special equipment
         i. Self-contained breathing apparatus
         ii. Protective clothing
            (a) Chemical

INSTRUCTOR'S NOTES

The EMT-I is no benefit to the patient if he is injured or otherwise incapacitated. This only increases number of victims which must be cared for by the remaining rescue personnel. Therefore a prime concern of an EMT-I must be self-protection.

Do not assume only one perpetrator.

(b) Gas
(c) Fire
(d) Environmental extremes
(e) Decontamination suit
iii. Aerial access equipment
iv. Water rescue protection
2. Patient
a. Environment
i. Patient protection
(a) Rain, snow, heat, cold
(b) Air or fluid chemical contamination
ii. Preserve modesty as much as possible
iii. Protection against further injury
b. Hostile situation
i. Perpetrator
ii. Crowd
c. Special protection equipment
i. Blankets
ii. Breathing apparatus

B. Backup
1. Personnel
2. Transport vehicle
3. Equipment for patient removal
4. EMT protection
5. Patient protection

C. Classification
1. Medical
2. Trauma
3. Behavioral
4. OB/GYN
5. Major incident

D. History of emergency
1. Events preceeding emergency
a. Accident
i. Type of trauma—blunt or penetrating
ii. Mechanism of injury
b. Medical
c. Change in environment
2. Pertinent medical history

E. Access to patient
1. Special equipment
2. Special personnel

Primary Survey

A. Airway
1. Anatomy

INSTRUCTOR'S NOTES

Radiation

Falls, glass, fire, noise, etc

Need for such backup must be recognized and requested immediately on arriving on the scene. Additional help needs to be en route as soon as possible.

Medical alert tags

Brief summary, allergies

a. Tongue/hypopharynx
b. Nasal air passages
    i. Hemorrhage
        (a) Spontaneous
        (b) Traumatic
c. Oral air passages
d. Pharynx
e. Larynx
f. Vocal cord function

2. Physiology
    a. Flow of air
    b. Humidification of air
3. Pathophysiology
    a. Pharyngeal
    b. Larynx
4. Management
    a. Manual
        i. Hyperextension
        ii. Chin lift
        iii. Jaw lift
        iv. Jaw thrust
    b. Obstructed airway
        i. Back blows
        ii. Manual thrust
        iii. Laryngoscope/McGill forceps
    c. Mechanical
        i. Nasal airway
            (a) Construction
            (b) Benefits
            (c) Limitations
            (d) Method of insertion
        ii. Oral airway
            (a) Construction
            (b) Benefits
            (c) Limitations
            (d) Method of insertion
            (e) Contraindications
        iii. Esophageal intubation
            (a) Construction
            (b) Benefits
            (c) Limitations
            (d) Method of insertion
            (e) Contraindications
        iv. Endotracheal intubation
            (a) Construction

INSTRUCTOR'S NOTES

Oropharynx

Optional.

Optional.

(b) Benefits
(c) Limitations
(d) Method of insertion
(e) Contraindications

d. Ventilation
i. Bag-valve
(a) Assessment of effective ventilation
(i) Rise in chest wall
(ii) Ascultation of lungs
(iii) Ascultation of stomach
(iv) Skin color
(v) Heart rate
ii. Demand valve
(a) Construction
(b) Method of operation
(c) Connection to airway
(d) Assessment of effective operation
(i) Rise in chestwall
(ii) Ascultation bilaterally of lungs
(iii) Ascultation of stomach
(iv) Skin color
(v) Heart rate

e. Protection of C-spine
i. Indication of C-spine trauma
(a) Identify injury above clavicle
(b) Unconscious
(c) Mechanism of injury

B. Breathing
1. Anatomy
a. Lungs, trachea, alveoli
b. Diaphragm
c. Thoracic wall
d. Pleural space
2. Physiology
a. Pulmonary expansion (inhalation/exhalation)
i. Diaphragm action
ii. Rib action
iii. Accessory muscles of respiration
iv. Inhalation by negative pressure, not positive
v. Pleural space effect
b. Gas exchange
i. Alveolar capillary membrane
ii. O_2 across membrane
iii. O_2 into red blood cells
iv. O_2 into solution

INSTRUCTOR'S NOTES

Bilaterally.

Bilaterally.

v. CO_2 across membrane
vi. CO_2 out of RBC
vii. CO_2 in solution

3. Pathophysiology
   a. Chest wall
      i. Open pneumothorax
         (a) Air follows easiest pathway
         (b) Collapse of lung
         (c) Decreased air exchange
   b. Diaphragm
      i. Paralysis
      ii. Injury
      iii. Rupture
   c. Lung-rupture/perforation
      i. Pneumothorax (simple)
         (a) Mild decreased exchange
         (b) No field treatment
         (c) Observation
      ii. Pneumothorax (tension)
         (a) Marked decrease air exchange
         (b) Signs and symptoms
            (i) Unilateral-absent breath sounds
            (ii) Deviated trachea
            (iii) Distended neck veins
            (iv) Cyanosis
            (v) Decreased blood pressure and pulse changes
   d. Flail chest
      i. Paradoxical chest wall movement
      ii. Pain-producing decreased chest expansion
      iii. Pulmonary contusion
4. Assessment
   a. Auscultation
   b. Respiratory effort
   c. Retraction
   d. Abdominal/thoracic respirations
   e. Exposure of chest
   f. Technique of exam
5. Management
   a. Mechanisms
      i. Mouth-to-mouth
      ii. Mouth-to-mask
      iii. Bag-valve-mask (BVM)
      iv. Esophageal intubation device
      v. Endotracheal intubation (ET)
   b. Evaluation of effectiveness

INSTRUCTOR'S NOTES

Optional.

i. Chest movement
ii. Auscultation
(a) Left lung field
(b) Right lung field
(c) Stomach (esogastrium)

c. Trauma
i. Thoracic wall stabilization
(a) Reduction of movement of flail segment
(b) Methods of achieving
(c) Limitations
ii. Evacuation pleural space
(a) Needle
(b) Dart
iii. Open chest wound
(a) Hand occlusion
(b) Vaseline gauze
(c) Plastic taped on three or four sides

C. Circulation
1. Perfusion
a. Anatomy
i. Circulation
ii. Heart
iii. Thorax
iv. Vascular system
b. Pathophysiology
i. Decreased perfusion
ii. Cardiac arrest
c. Evaluation
i. Pulse
(a) Rate
(b) Character
ii. Capillary refill
iii. Location of pulse
(a) Radial
(b) Femoral
(c) Carotid
iv. Skin color
(a) Pink
(b) Pale
(c) Cyanotic
(d) Mottled
d. Management
i. Cardiac compressions
ii. Hemorrhage
(a) anatomy

INSTRUCTOR'S NOTES

(BP>80 mm Hg)
(BP>70 mm Hg)
(BP>60 mm Hg)

Any changes developed by the American Heart Association for Basic or Advanced Cardiac Life Support should be reflected

(i) Skin
(ii) Bone
(iii) Vessels
(iv) Subcutaneous fat
(b) Evaluation—massive hemorrhage versus minor hemorrhage
(c) Management
(i) Direct pressures
(ii) Tourniquets
(iii) Hemostats

D. Disability: mini-neuro exam
1. Level of consciousness (AVPU)
a. A—Alert
b. V—Vocal stimuli response
c. P—Painful stimuli response
d. U—Unresponsive

E. Expose
1. Expose entire body for exam, limited only to environment, bystanders, and situation.

Resuscitation

A. Shock resuscitation
1. Physiology
a. Shock-tissue anaerobic metabolism. The Fick Principle has two components.
i. Oxygenation of RBC
ii. RBC delivery to tissue cells
2. Evaluation
a. Heart rate
b. Diastolic pressure
c. Systolic pressure
d. Capillary refilling
e. Skin color
f. Skin temperature
3. Management
a. Oxygenation
b. Pneumatic antishock
c. Fluid replacement

B. Maintain stability of items in primary survey

Secondary Survey

A. Technique
1. Look
2. Listen
3. Feel
4. Smell

B. Regional evaluation
1. Step-wise organized evaluation

in the objectives and outline of the instructor.

Hand, 4 × 4, & pneumatic splints are effective if correctly used. Ischemic distal to side. May force amputation at that point. Seldom if ever required.

Appropriately/Inappropriately.

Appropriately/Inappropriately.

The patient's modesty and comfort should be taken into consideration along with severity of possible injury when deciding when and where to expose the entire body.

If either of these components is not adequate, RBC will receive inadequate oxygen and be forced from aerobic to anaerobic.

Inspection

Auscultation

Palpation

Organized by body region

2. Redefine priorities

C. Head
   1. Skin, scalp
   2. Eyes
   3. Nose
   4. Mouth
   5. Bones
      a. Facial
      b. Mandible
      c. Skull

D. Neck
   1. Skin
   2. Soft tissue
   3. Trachea
   4. Vessels
   5. Cervical spine

E. Thorax
   1. Skin
   2. Chest wall
      a. Bones
      b. Muscles
   3. Lungs
      a. Auscultation
      b. Palpation
   4. Heart
      a. Auscultation
      b. Palpation
      c. Electrocardiogram

F. Abdomen
   1. Structures
      a. Skin
      b. Muscles
      c. Peritoneal contents
      d. Retroperitoneal
      e. Lumbar spine
      f. Pelvis
      g. Genitalia
   2. Technique
      a. Inspection
      b. Palpation
   3. Objective

G. Extremities
   1. Structures
      a. Skin
      b. Soft tissue

INSTRUCTOR'S NOTES

Evaluate only those problems that are field treatable, that should be stabilized in the field or that will influence transportation.

Evaluate only that which affects field management

c. Vessels
d. Bones
2. Technique
a. Inspection
b. Palpation

H. Neurological
1. Level of consciousness
2. Seizure activity
3. Motor
4. Sensory
5. Pupils
6. Range of motion

I. Trauma Score
1. Technique
a. Capillary return
b. Respiratory effort
c. Eye opening
d. Verbal response
e. Motor response
2. Significance

History

A. Chief complaint
1. Verbal complaint
2. Nonverbal complaint

B. Present illness
1. Symptoms as related to chief complaint
2. Associated symptoms
3. Referred symptoms

C. History mnemonic
1. A. = Allergies
2. M = Medications
3. P = Past history
4. L = Last oral intake
5. E = Events leading up to emergency

Definitive Field Management

A. Packaging for transportation
1. Airway
2. Ventilation
3. IV fluids
4. PASG
5. Cardiac monitoring
6. Fracture stabilization
7. Bandaging
8. Immobilization to stretcher
9. Additional drugs prior to transport

INSTRUCTOR'S NOTES

Deviation, swelling, discoloration. Range of motion, circulation, sensation, crepitation, bone deformation, pain.

At the time of the development of curricula Trauma Scores are under revision. Consult current literature.

History obtained at appropriate opportunity.

AMPLE.
Ample.
aMple.
amPle.
ampLe.
amplE.

Optional

10. Blood
    a. Glucose
    b. Samples for hospital
        i. Types and match
        ii. Complete blood count (CBC)
        iii. Chemistries
11. Extrication from emergency situation

B. Loading
1. Placement of vehicle
2. Movement of patient into vehicle

C. Transportation
1. Hospital
    a. Patient choice
    b. Closest appropriate
2. Speed
    a. Light and sirens
    b. Patient comfort
    c. EMT-I access to patient
        i. Re-evaluation
        ii. Treatment
3. Delay at scene for inappropriate evaluation/treatment should not occur

D. Communication
1. Family
2. Patient reassurance
3. Medical control
    a. Medical command authority
        i. Physician
        ii. Nurse with physician backup
    b. Procedure
        i. Situation
        ii. Category
            (a) Medical
            (b) Trauma
            (c) Behavioral
            (d) OB/GYN
        iii. Sex and age
        iv. Chief complaint
        v. Trauma score
        vi. Brief present illness
        vii. Physical findings
        viii. AMPLE history
        ix. Clinical impression
        x. Treatment to present
        xi. Requests further treatment
        xii. Estimate time of arrival at hospital

INSTRUCTOR'S NOTES

To be drawn based on local desires.

< than 5% occurrence

This system enables the EMT-I and the physician at the hospital to assess objectively the severity of the patient's injury. This will provide appropriate transportation to the appropriate hospital while appropriate care is given en route and appropriate preparations made to receive & care for the patient at the hospital.

ETA

TOPIC	CONTENT OUTLINE

4. Run report
    a. Completeness
    b. Medical/legal
    c. Signatures

Re-evaluation

A. Need
    1. Rapid change in condition
        a. Continuing blood loss
        b. Airway compromise
        c. Decreased ventilation
    2. Missed injuries
        a. Poor environment for initial evaluation
        b. Improved status of patient allows identification by additional areas of injury
    3. Change in methods by life support as condition changed
B. Parameters
    1. Airway
    2. Ventilation
    3. Pulse
    4. Skin color
    5. Blood pressure
    6. Electrocardiogram
    7. Neurological status
    8. Circulation distal to fracture
    9. Intravenous rate
    10. Oxygenation
    11. Lung sounds